What is claimed is:

1. A polarization maintaining optical fiber comprising: a core; a cladding disposed around the core; and two stress applying portions disposed in the cladding to be approximately symmetrical with respect to the core,

wherein an angle formed by a line connecting the center of one of the stress applying portions with the center of the core and a line connecting the center of the other stress applying portion with the center of the core is 3 degrees or less.

2. A polarization maintaining optical fiber preform comprising: a core element; a cladding element disposed around the core element; and two stress applying elements disposed in the cladding element to be approximately symmetrical with respect to the core element,

which is produced by forming an optical fiber preform including the core element and the cladding element, forming one insertion hole in the cladding element so as to pierce through the cladding element in parallel to the core element, and then rotating the optical fiber preform further including the insertion hole 180 degrees around the core element, followed by forming the other insertion hole in the cladding element so as to pierce through the cladding element in parallel to the core element, and then inserting the stress applying elements into the insertion holes.

3. A polarization maintaining optical fiber according to claim 1, which is produced from the polarization maintaining optical fiber preform according to claim 2.

4. A method of producing a polarization maintaining optical fiber preform including a core element, a cladding element disposed around the core element, and two stress applying elements disposed in the cladding element to be approximately symmetrical with respect to the core element, comprising:

a step of forming an optical fiber preform including the core element and the cladding element;

a step of forming one insertion hole in the cladding element so as to pierce through the cladding element in parallel to the core element;

a step of rotating the optical fiber preform further including the insertion hole 180

degrees around the core element;

a step of forming the other insertion hole in the cladding element so as to pierce through the cladding element in parallel to the core element; and

a step of inserting the stress applying elements into the insertion holes.

5. A method of producing a polarization maintaining optical fiber comprising:

a step of melting and drawing the polarization maintaining optical fiber preform produced by the method according to claim 4.